

## DAT315. List of Recommended Articles

You may choose some of them for the summarization exercise, according to your interests. Further suggestions are welcome, too, and they might be inserted. Articles are sorted chronologically rather than by topics. Papers should be available on the Web or via the library – ask for a copy only if you really cannot access a paper.

- C.A.R. Hoare: An Axiomatic Basis for Computer Programming. Communications of the ACM 12 (10) 576–580 (1969) – About proving properties (correctness etc.) of programs by the axiomatic method. As the paper is old, a review should relate the paper to more recent developments.
- B.H. Bloom: Space/Time Trade-offs in Hash Coding with Allowable Errors. Communications of the ACM 13 (7) 422–426 (1970) – Error-tolerant hashing with a sample application. The method became popular as Bloom filter and has been further developed and applied.
- C.L. Liu, J.W. Layland: Scheduling Algorithms for Multiprogramming in a Hard-Real-Time Environment. Journal of the ACM 20 (1) 46–61 (1973) – Despite the age of this work, topics are not outdated, and much research has been done in the field since then.
- J. Ziv, Ab. Lempel: A Universal Algorithm for Sequential Data Compression. IEEE Transactions on Information Theory 23 (3), 337–343 (1977) – The classical Ziv-Lempel compression.
- R.L. Rivest, A. Shamir, L.M. Adleman: A Method for Obtaining Digital Signatures and Public-Key Cryptosystems. Communications of the ACM 26 (1) 96–99 (1983) – The classical RSA cryptosystem.
- L.G. Valiant: A Theory of the Learnable. Communications of the ACM 27 (11) 1134–1142 (1984) – Pioneering paper in machine learning that introduced the concept known as “probably almost correct” (PAC) learning.

- J.R. Quinlan: Induction of Decision Trees. *Machine Learning* 1 (1) 81–106 (1986) – A classical approach in machine learning, for representing and inferring concepts.
- G. Salton, C. Buckley: Term-Weighting Approaches in Automatic Text Retrieval. *Information Processing and Management* 24 (5) 513–523 (1988). – An early summary of the performance of term weighting schemes for information retrieval from text.
- J.L. Elman: Finding Structure in Time. *Cognitive Science* 14 (2) 179–211 (1990) – About representing the dimension of time in neural networks, with applications to language processing.
- B.E. Boser, I. Guyon, V.I. Vapnik: A Training Algorithm for Optimal Margin Classifiers. 5th ACM Conf. on Computational Learning Theory COLT 1992, 144–152
- R. Agrawal, T. Imielinski, A.N. Swami: Mining Association Rules between Sets of Items in Large Databases. *ACM SIGMOD Int. Conf. on Management of Data* 1993, 207–216, and  
R. Agrawal, R. Srikant: Fast Algorithms for Mining Association Rules in Large Databases. *Conf. on Very Large Data Bases VLDB* 1994, 487–499 – How to discover relevant patterns and knowledge in relational databases.
- Y. Freund, R.E. Schapire: Experiments with a New Boosting Algorithm. *Int. Conf. Machine Learning ICM* 1996, 148–156 – Boosting is a general method to combine the strengths of different machine learning algorithms.
- H. Hoppe: Progressive Meshes. 23rd Conf. on Computer Graphics SIGGRAPH 1996, 99–108. Important concept in computer graphics and simulations.
- M. Ester, H.P. Kriegel, J. Sander, X. Xu: A Density-Based Algorithm for Discovering Clusters in Large Spatial Databases with Noise. 2nd Int. Conf. on Knowledge Discovery and Data Mining KDD 1996, 226–231. – Introduced a popular clustering algorithm called DBSCAN.
- P.N. Belhumeur, J.P. Hespanha, D.J. Kriegman: Eigenfaces vs. Fisherfaces: Recognition Using Class Specific Linear Projection. *IEEE Transactions on Pattern Analysis and Machine Intelligence* 19(7) 711–720 (1997) – Robust face recognition via linear algebra.

- T. Joachims: Text Categorization with Support Vector Machines: Learning with Many Relevant Features. 10th European Conf. on Machine Learning ECML 1998, 137–142 – Proposes to use SVMs to divide texts into categories.
- L. Page, S. Brin, R. Motwani, T. Winograd: The PageRank Citation Ranking: Bringing Order to the Web. Technical Report, Stanford InfoLab (1998), and  
J.M. Kleinberg: Authoritative Sources in a Hyperlinked Environment. Journal of the ACM 46 (5) 604–632 (1999) – How to find important web pages based on the network structure of links.
- A.L. Barabási, R. Albert: Emergence of Scaling in Random Networks. Science 286, 509–512 (1999) – Explains the structure of networks, both biological networks and the WWW, by a random self-organization mechanism.
- S.T. Roweis, L.K. Saul: Nonlinear Dimensionality Reduction by Locally Linear Embedding. Science 290, 2323–2326 (2000) – Brief description of an idea to compress high-dimensional data sets to facilitate data analysis and visualization; should be compared to later developments in machine learning.
- J. Shi, J. Malik: Normalized Cuts and Image Segmentation. IEEE Transactions on Pattern Analysis and Machine Intelligence 22 (8) 888–905 (2000) – Graph algorithm approaches to the partitioning of images into areas of objects.
- Y. Boykov, O. Veksler, R. Zabih: Fast Approximate Energy Minimization via Graph Cuts. IEEE Transactions on Pattern Analysis and Machine Intelligence 23 (11) 1222–1239 (2001), conference version in: International Conference on Computer Vision ICCV 1999, pp. 377–384 (1999) – The title does not say it, but again, a graph-theoretic approach is used for image processing tasks.
- L. Breiman: Random Forests. Machine Learning 45 (1) 5–32 (2001) – This machine learning technique reduces classification errors by combining several decision trees.

- R.L. Rivest, A. Shamir, Y. Tauman: How to Leak a Secret. 7th Int. Conf. on the Theory and Applications of Cryptology and Information Security ASIACRYPT 2001, 552–565 – A cryptosystem that solves some problems in multiparty communication of secrets.
- K. Papineni, S. Roukos, T. Ward, W.J. Zhu: Bleu: a Method for Automatic Evaluation of Machine Translation. 40th Annual Meeting of the Association for Computational Linguistics ACL 2002, 311–318
- D.G. Lowe: Distinctive Image Features from Scale-Invariant Keypoints. Int. Journal of Computer Vision 60 (2) 91–110 (2004) – Presents a method to extract image features for image comparison and object recognition.
- J. Dean, S. Ghemawat: MapReduce: Simplified Data Processing on Large Clusters. 6th Symp. on Operating System Design and Implementation OSDI 2004, 137–150 – The original description of a widely used model for the parallelization of processing large data sets.
- N. Dalal, B. Triggs: Histograms of Oriented Gradients for Human Detection. IEEE Computer Society Conf. on Computer Vision and Pattern Recognition CVPR 2005, 886–893 – Short report about feature selection for support vector machines detecting humans in pictures.
- D.L. Donoho: Compressed sensing. IEEE Transactions on Information Theory 52 (4) 1289–1306 (2006) – Mathematical foundation of storing and reconstructing sparse signals (for instance, compressed images). Meanwhile the field is extensively studied and has found numerous applications.
- E.J. Candes, J.K. Romberg, T. Tao: Robust Uncertainty Principles: Exact Signal Reconstruction from Highly Incomplete Frequency Information. IEEE Transactions on Information Theory 52 (2) 489–509 (2006)